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ART UNIT	PAPER NUMBER
2626	

DATE MAILED: 01/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-18* is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-11 and 15* is/are rejected.

7) ☒ Claim(s) *12-14 and 16-18* is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on *20 May 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☐ All b)☐ Some * c)☐ None of:

       1.☐ Certified copies of the priority documents have been received.

       2.☐ Certified copies of the priority documents have been received in Application No. _____.

       3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date *06-29-2001*.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1.   **Claims 1, 2, 3, 4, 6, 7, 9, and 10** are rejected under 35 U.S.C. 102(b) as being

anticipated by U.S. Patent No. 5,359,436 to Dichter et al.

Regarding **Claim 1**, Dichter et al. disclose a method of generating a black

component of an output color comprising:

receiving input color data defined in a first color space (C_{ORIG}, M_{ORIG}, Y_{ORIG} are

received as input to Element 2, refer to Figure 1);

converting the received input color data to intermediate color data defined in

an intermediate color space (C_{ORIG}, M_{ORIG}, Y_{ORIG} are converted to C_{NEW}, M_{NEW},

and Y_{NEW} by Element 2, refer to Figure 1);

calculating a first black component factor from the input color data (refer to

Column 4 Lines 27-28, Column 5 Lines 50-51, and Column 7 Lines 20-21, and

also Column 7 Lines 48-49);

calculating a second black component factor from the intermediate color data

(refer to Column 4 Lines 34-35, Column 5 Lines 56-57, and Column 7 Lines 26-

27, and also Column 7 Lines 54-55);

and

combining the first black component factor and the second black component

factor (refer to Column 2 Lines 28-31, and also Column 4 Line 38, Column 5 Line

61, Column 7 Line 59).

Regarding **Claim 2**, the receiving input color data step as disclosed by Dichter et

al. comprises receiving input color separation values (refer to Figure 1, C_{ORIG}, M_{ORIG},

Y_{ORIG}).

Regarding **Claim 3**, the Element 2 of Figure 1 in Dichter et al.'s invention

converts the received input color data to CMY (refer to Figure 1 Element 2).

Regarding **Claim 4**, Dichter et al. disclose the calculation of the first black

component factor by applying a function to the input color separation values ($f_{skeleton}$

$_{black}$\{smallest of $Y_{original}$, $M_{original}$, $C_{original}$\}, refer to Column 7 Lines 55-56) where the

function depends on predefined threshold values (the predefined threshold value is the

smallest of $Y_{original}$, $M_{original}$, $C_{original}$).

Regarding **Claim 6**, Dichter et al. disclose the calculation of the second black

component factor from the converted CMY values (refer to Column 4 Lines 34-35,

Column 5 Lines 56-57, and Column 7 Lines 27-28).

Regarding **Claim 7**, Dichter et al. disclose an image output terminal, a method of

outputting a digital color image comprising:

converting input components corresponding to a color in a first color space (refer

to Figure 1, C_{ORIG}, M_{ORIG}, Y_{ORIG}) to intermediate components in a second color

space (C_{ORIG}, M_{ORIG}, Y_{ORIG} are converted to C_{NEW}, M_{NEW}, and Y_{NEW} by Element 2,

refer to Figure 1), where the second color space includes only chromatic

components (only C_{NEW}, M_{NEW}, and Y_{NEW}), and

deriving an output black component from both the intermediate components

and the input components (refer to Column 7 Line 60).

Regarding **Claim 9**, Dichter et al. disclose the output data comprising the

intermediate components (refer to Figure 1 Elements CNEW, MNEW, YNEW) and the

output black component (refer to Figure 1 Element K RECALC.).

Regarding **Claim 10**, the method of outputting a digital color image as set forth

in claim 7, where the deriving an output black component comprises:

applying a defined process to the input components (refer to Column 4 Lines 27-

28, Column 5 Lines 50-51, and Column 7 Lines 20-21, and also Column 7 Lines

48-49),

applying a different process to the intermediate components (refer to Column 4

Lines 34-35, Column 5 Lines 56-57, and Column 7 Lines 26-27, and also Column

7 Lines 54-55), and

combining the processed input components and the differently processed

intermediate components (refer to Column 2 Lines 28-31, and also Column 4

Line 38, Column 5 Line 61, Column 7 Line 59).

2.   **Claim 15** is rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent

No. 5,739,917 to Shu et al.

Regarding **Claim 15**, Shu et al. disclose a system for creating an achromatic

component for an output color space from an input color space including only chromatic

components, the system comprising:

a receiver that receives input color separations in the input color space (refer to

Figure 4 Elements C, M, Y);

a converter that converts the input color separations to intermediate color

separations (refer to Figure 4 Element 50); and

an achromatic component generator (refer to Figure 4 Element 50) in data

communication with the receiver and the converter, the achromatic component

generator calculating an achromatic color separation from functions including at

least one input color separation and intermediate color separation (refer to Figure

4, the black component K is calculated by Element 50, and UCR is performed).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

3.   **Claim 5** is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S.

Patent No. 5,359,436 to Dichter et al.

Regarding **Claim 5**, Dichter et al. disclose that the HSL changes are applied

directly to the CMY space (refer to Column 1 Lines 64-65) instead of first converting the

CMY values to HSL values and then applying the HSL changes (refer to Column 1

Lines 16-21). Dichter et al. do not describe the use of HSV color space.

However, one having ordinary skill in the art would recognize that HSL and HSV

color spaces are quite similar color space. They are actually the different forms of the

HSV cylindrical space. The only difference is that in order to get the white color in the

HSV color space, saturation value should be set to zero (0). On the other hand, in HSL

color space, the white color is achieved by setting the luminance value to one (1)

regardless of the saturation value. Therefore, it would have been obvious to one having

ordinary skill in the art to easily use the HSV instead of the HSL color space as

disclosed in Dichter et al.'s invention.

4.   **Claims 8, and 11** are rejected under 35 U.S.C. 103(a) as being unpatentable

over U.S. Patent No. 5,359,436 to Dichter et al. in view of U.S. Patent No. 5,739,917 to

Shu et al.

Regarding **Claim 8**, Dichter et al. disclose the conversion of input components in

a first color space (refer to Figure 1, C_{ORIG}, M_{ORIG}, Y_{ORIG}) to components in a second

color space (C_{ORIG}, M_{ORIG}, Y_{ORIG} are converted to C_{NEW}, M_{NEW}, and Y_{NEW} by Element 2,

refer to Figure 1), and the generation of the black component from the first and second

color space components (refer to Column 7 Line 60). However, Dichter et al. do not

disclose that the components in the second color space are adjusted based on the

calculated black component.

Shu et al. also disclose the conversion (performed by Element 50 of Figure 4) of

input components in a first color space (refer to Figure 4, C, M, and Y) to components in

a second color space (refer to Figure 4, C', M', Y', K). According to Shu et al., Element

50 of Figure 4 performs UCR. UCR is well known in the art, and is also described by

Shu et al. The purpose of UCR is to replace equal amounts of the three colors CMY

with black ink (refer to Column 4 Lines 56-61). Hence, the components in the second

color space (C', M', Y', K) are adjusted based on K.

Therefore, it would have been obvious to one having ordinary skill in the art to apply UCR to Dichter et al.'s invention. The motivation to do so is to reduce the amount of color ink used, and therefore color ink cost is also reduced. The ink cost is reduced because the amount of color ink being used is reduced, and black ink is less expensive than color ink.

Regarding **Claim 11**, Dichter et al. do not teach the minimization of the CMY values in the intermediate color space.

Shu et al., however, disclose the use of UCR in which the lowest of C, M, and Y values are subtracted from all three and assign that value to K (refer to Column 4 Lines 56-61). Therefore CMY values are minimized.

Allowable Subject Matter

5.   **Claims 12, 13, 14, 16, 17, and 18** are allowable.

6.   **Claims 12, 13, 14, 16, 17, and 18** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications should be

directed to Jason Vuong at 703-306-4157. The examiner can normally be reached on

Monday-Friday from 8:00 A.M. to 5:00 P.M.
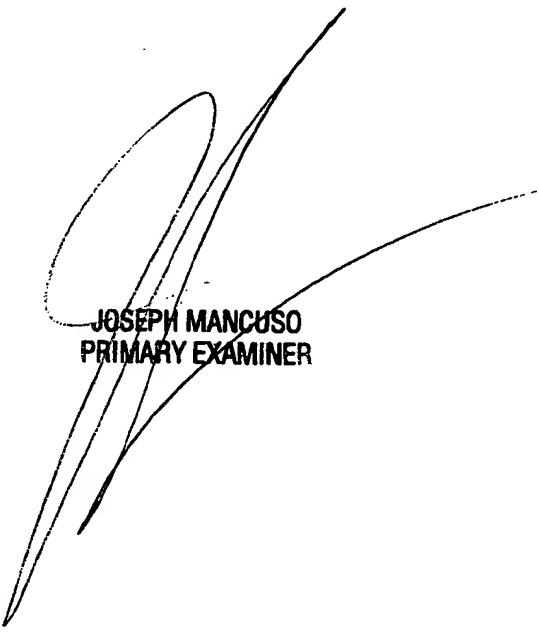
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